FlyBy Math™ Alignment to
Utah Mathematics– Math 7 [2002]
Process Standards, Core Standards and Objectives

Process Standards

Problem Solving

Process Standard	***FlyBy Math*™ Activities**
5. Utilize different problem solving strategies including: a. Drawing a picture or diagram. b. Looking for a pattern. c. Identifying counterexamples. d. Choosing an appropriate operation. e. Guessing and checking. f. Making a list, table, graph, or equation. g. Working backwards. h. Eliminating possibilities. i. Making a model or simulation. j. Solving a simpler or related problem. k. Checking the reasonableness of results. l. Using proportional reasoning.	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios. --Conduct simulation and measurement for several aircraft conflict problems. --Use tables, graphs, and equations to solve aircraft conflict problems.
8. Estimate solutions to problems and determine the reasonableness of answers by relating them to the estimates.	--Predict outcomes and explain results of mathematical models and experiments.

Reasoning and Proof

Process Standard	***FlyBy Math*™ Activities**
2. Explain and justify problem-solving procedures.	--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.
3. Examine patterns and note regularities and irregularities in various types of problems.	--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

Communication

Process Standard	***FlyBy Math*™ Activities**
1. Express mathematical ideas coherently and clearly to peers, teachers, and others.	--Predict outcomes and explain results of mathematical models and experiments.

Connections

Process Standard	***FlyBy Math*™ Activities**
1. Formulate real-world situations that require extended investigations, solve them, and justify answers.	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

2. Establish connections among mathematical expressions, physical models, pictorial representations, and real-world situations.	--Apply mathematics to predict and analyze aircraft conflicts and validate through experimentation. --Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.
5. Recognize and apply mathematical ideas and relationships in areas outside the mathematics classroom, e.g., art, science, other curricular areas, and everyday life.	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.
Representation	
Process Standard 2. Represent mathematical concepts using physical models, visualizations, and appropriate symbolic notations.	***FlyBy Math™* Activities** --Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system. --Conduct simulation and measurement for several aircraft conflict problems.
3. Represent problem situations verbally, numerically, graphically, geometrically, or algebraically.	--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

Standard 2 Students will use patterns, relations, and functions to represent and analyze mathematical situations using algebraic symbols.	
Objective 2 Represent, solve, and analyze mathematical situations using algebraic symbols.	
Objective 7. Use proportional reasoning to solve problems.	***FlyBy Math™* Activities** --Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.
Objective 3 Represent quantitative relationships using mathematical models and symbols.	
Objective 1. Model and solve real-world problems using various representations, such as graphs, tables, manipulatives, and pictures.	***FlyBy Math™* Activities** --Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.
3. Use graphs and tables to identify and describe changes in related quantities.	--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system. --Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates.

Standard 3 Students will use spatial and logical reasoning to recognize, describe, and identify geometric shapes and principles.	
Objective 2 Specify locations and describe spatial relationships using coordinate geometry.	
Objective	***FlyBy Math™* Activities**
1. Graph ordered pairs of integers on a rectangular coordinate system.	--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.

Standard 4 Students will understand and apply measurement tools, formulas, and techniques.	
Objective 1 Understand measurable attributes of objects and the units, systems, and processes of measurement.	
Objective	***FlyBy Math™* Activities**
1. Measure a variety of items using both metric and customary units.	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.
Objective 2 Determine measurements using appropriate tools and formulas.	
Objective	***FlyBy Math™* Activities**
2. Measure length, area, volume, and angles to appropriate levels of precision.	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.

Standard 5 Students will draw conclusions using concepts of probability after collecting, organizing, and analyzing a data set.	
Objective 1 Design investigations to reach conclusions using statistical methods to analyze data.	
Objective	***FlyBy Math™* Activities**
1. Identify appropriate questions for data collection and then collect, organize, and display responses to the questions.	--Conduct simulation and measurement for several aircraft conflict problems. --Represent distance, rate, and time data using tables, line plots, bar graphs, and line graphs.
2. Collect, organize, and display data using frequency tables, line plots, bar graphs, circle graphs, line graphs, and stem-and-leaf plots.	--Conduct simulation and measurement for several aircraft conflict problems. --Represent distance, rate, and time data using tables, line plots, bar graphs, and line graphs.

3. Display the same set of data utilizing two or more different types of representations.	--Choose among tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.
6. Predict basic trends illustrated in a graph.	--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.